



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/790,690	03/03/2004	Mark Verrall	MERCK-1972 D2	2308

23599 7590 11/09/2005

MILLEN, WHITE, ZELANO & BRANIGAN, P.C.  
2200 CLARENDON BLVD.  
SUITE 1400  
ARLINGTON, VA 22201

EXAMINER
----------

BERMAN, SUSAN W

ART UNIT	PAPER NUMBER
----------	--------------

1711

DATE MAILED: 11/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/790,690

Applicant(s)

VERRALL ET AL.

Examiner

Susan W. Berman

Art Unit

1711

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 09 August 2005.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>10/05</u> | 6) <input type="checkbox"/> Other: _____  |

Art Unit: 1711

***Terminal Disclaimer***

The terminal disclaimer filed on 08-09-2005 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of US Patents 6,379,758; 6,183,822; 6,544,605; and 6,669,865 has been reviewed and is accepted. The terminal disclaimer has been recorded.

In response the rejections under obviousness-type double patenting of record are withdrawn.

***Response to Amendment***

The rejection of claims 1, 3-5 and 11-13) as being anticipated by Broer et al (5,506,704) is withdrawn in order to simplify the issues.

The rejection of claims 1, 3-13 as being anticipated by Hikmet (5,762,823) is withdrawn. It is agreed that Hickmet discloses less than or equal to 2 wt. % of mesogen having two polymerizable groups and a liquid crystalline group.

The rejection of claims 1, 3-9 and 11-13 as being anticipated by Hasabe et al (5,863,457) is withdrawn because Hasabe et al do not teach a compound of formula I having more than one polymerizable group.

The rejection of claims 1, 3-5, 9, 11-13 and 18 as being anticipated by Sage et al (5,948,486) is withdrawn. Sage et al do not teach a compound of formula I having more than one polymerizable group.

The rejections of claims as being anticipated by each of Coates et al (5,989,461), Jolliffe et al (6,316,066) and Hassall et al (5,770,107) are withdrawn. A certified copy of applicant's priority document EP 96114855.8, filed 09-17-1996, is filed in application Serial No. 09/254,185.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

Art Unit: 1711

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 20 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. There is no mention found in the specification as filed of a mixture that does not comprise a chiral compound. While chiral compounds are not mentioned, this is not a recognition that the disclosed mixtures should not contain a chiral compound.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In the last two lines of the Claim 1 defines the compound of formula I having more than one polymerizable groups twice within the same claim. It is suggested that the second definition on pages 4-5 be deleted since the formula set forth is already set forth in the first definition wherein R is  $P(\text{SpX})_n$ . Also the phrase "as defined in formula I" should be deleted since all the elements of  $P(\text{SpX})_n$  are already defined and cannot be anything else.

In claims 6-8, it is not clear whether applicant intends to claim a mixture wherein the compound of formula I is a monoreactive compound or to claim a mixture comprising the compound of formula I and a different dielectrically positive monoreactive mesogenic compound.

With respect to claim 11, the definitions of  $A^1$ ,  $A^2$ , and  $A^3$ , as amended, are not clear. In lines 5-10 it is not clear what is intended by the phrase "1,4-phenylene where one or more CH groups optionally

Art Unit: 1711

replaced by N; 1,4- cyclohexylene, optionally, one or two non-adjacent CH<sub>2</sub> groups are replaced by O and/or S; 1,4-cyclohexenylene; or naphthalene-2,6-diyl; optionally these groups are....may be substituted by F or Cl". Are 1,4-cyclohexylene and naphthalene-2,6-diyl being referred to by "these groups" with respect to the description in lines 8-10?

*Claim Rejections - 35 USC § 102/ Claim Rejections - 35 USC § 103*

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1, 3-9, 11-13 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Broer et al (4,892,392). Broer et al disclose polymerizable compounds containing mesogenic groups having one or two polymerizable groups (see compounds 1-13, column 3, lines 10-36, and claim 3). Compounds with a polar terminal cyano group are included. Less than 10 wt % of photoinitiator is added, which encompasses the range of 0.01 to 5% photoinitiator disclosed by applicant, and leaves the remainder of the composition in a weight range greater than 90%. Compositions disclosed by Broer et al wherein the weight percent of monofunctional compound (formula 1) is from 10 to 99% and the weight percent of difunctional compound of formula 2 or 3 is from 5 to 70 % anticipate the instantly claimed mixtures.

Claims 1, 3-9, 11-13 and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Broer et al (4,892,392). Broer et al disclose polymerizable compounds containing mesogenic groups having one or two polymerizable groups (see compounds 1-13, column 3, lines 10-36, and claim 3). Compounds with a polar terminal cyano group are included. Less than 10 wt % of photoinitiator is added, which encompasses the range of 0.01 to 5% photoinitiator disclosed by applicant, and leaves the

Art Unit: 1711

remainder of the composition in a weight range greater than 90%. Broer et al do not teach the specific weight % limitations set forth in instant claims 1 or 10.

Broer et al teach that the disclosed acrylate monomer can be dissolved and the resulting solution can be provided as a thin film on a substrate (column 3, lines 10-15). It would have been obvious to one skilled in the art at the time of the invention to select toluene as solvent to dissolve the compositions disclosed by Broer et al, in the absence of evidence to the contrary. It is considered to be the ordinary skill of one skilled in the art to select an appropriate solvent for a given composition. One of ordinary skill in the art at the time of the invention would have been motivated to select a solvent in order to provide a thin film on a substrate, as taught by Broer et al. It would have been obvious to one skilled in the art at the time of the invention to determine the % by weight of mesogenic compound having one polymerizable group and the % by weight of compound having two or more polymerizable groups required to obtain the desired properties for a particular application from the disclosure of Broer et al.

### *Double Patenting*

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-20 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 3-8 of U.S. Patent No. 5,750,051. Although the conflicting claims are not identical, they are not patentably distinct from each other for the following reasons. The

Art Unit: 1711

claims of US '051 set forth a mixture of monofunctional and bifunctional compounds corresponding to compounds set forth in the instant claims wherein the mesogenic group is terphenyl. It would have been obvious to one skilled in the art at the time of the invention to provide mixtures of monofunctional and bifunctional compounds containing other known mesogenic groups from the claims of US '051. One of ordinary skill in the art at the time of the invention would have been motivated by a reasonable expectation of providing useful compositions for forming anisotropic films.

Claims 1-19 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-8 of U.S. Patent No. 6,316,066. Although the conflicting claims are not identical, they are not patentably distinct from each other for the following reasons. It would have been obvious to one skilled in the art at the time of the invention to provide mixtures of monofunctional and bifunctional compounds containing mesogenic groups having a structure as shown in claim 2 of US '066 because claim 4 sets forth mixtures comprising a polymerizable mesogenic compound MA having two or more polymerizable groups. One of ordinary skill in the art at the time of the invention would have been motivated by a reasonable expectation of providing useful compositions for forming anisotropic films.

Claims 1-19 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 15-19 of U.S. Patent No. 6,010,643. Although the conflicting claims are not identical, they are not patentably distinct from each other for the following reasons. Claim 15 sets forth a copolymerizable material comprising a bifunctional reactive achiral compound of formula II and a chiral polymerizable terpenoid-containing compound of formula I. It would have been obvious to one skilled in the art at the time of the invention to select compounds corresponding to those set forth in the instant claims to provide a polymerizable mixture for forming anisotropic films. One of ordinary skill

Art Unit: 1711

in the art at the time of the invention would have been motivated by a reasonable expectation of providing useful compositions for forming anisotropic films.

### *Conclusion*

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Susan W Berman whose telephone number is 571 272 1067. The examiner can normally be reached on M-F 9:30-6:00.

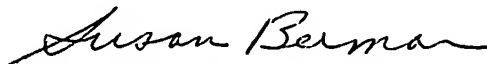
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on 571 272 1078. The fax phone number for the organization where this application or proceeding is assigned is 571 273 8300.



Art Unit: 1711

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SB  
10/18/2005

  
Susan W Berman  
Primary Examiner  
Art Unit 1711